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Environmental Protection 1971

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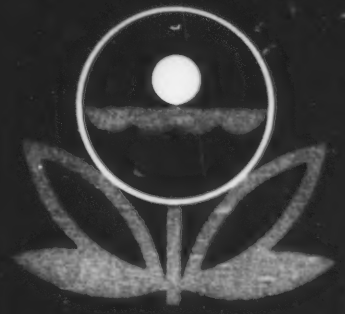

Environmental Protection—1971

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The Environmental Protection Agency was established in December 1970, with the task of pulling together a diversity of Federal programs and organizations into a viable structure. The objective is to improve the U.S. environment with minimal disruption of social and economic aspects. The report provides an informal overview of EPA's first year.

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Environmental Protection —1971

Environmental quality emerged as a major national issue in the late 1960's as the public became keenly aware of pollution problems and demanded action to protect the environment.

Laws began to reflect this environmental concern. States, sometimes leading the Federal Government, enacted laws creating environmental departments or specifically restricting polluting practices. New federal laws were aimed at individual environmental problems, such as air and water pollution. But the effort was piecemeal; various government units reacted in their own way to public demand.

By 1970, the American public, the Congress and the President had arrived at a new determination to stop environmental degradation and to move toward an orderly process of protection and improvement of our habitiat. Just the year before, Congress passed and the President signed a clear statement of policy regarding the environment—the National Environmental Policy Act of 1969:

> "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality."

The Act directed all agencies of the Federal Government to take into account the environmental consequences of their proposed actions in decision-making. Specifically, it required a detailed statement of the environmental impact of each proposed action significantly affecting the quality of the human environment. The impact statement process was to become an important tool for federal leadership in environmental control.

The Council, under the chairmanship of Russell E. Train, was formed in January 1970, to advise the President on environmental matters. During 1970, other important events occurred. Congress passed the Clean Air Act Amendments of 1970. An old law, the Refuse Act of 1899, intended to keep rivers navigable, was revived and mobilized to improve the quality of the nation's water.

On December 2, the President's plan for organizing federal environmental programs, sent to Congress July 9, took on real substance with the creation of the U. S. Environmental Protection Agency, a strong, independent, federal regulatory agency charged with the responsibility to mount an integrated, coordinated attack on environmental problems. William D. Ruckelshaus was appointed Administrator.

The President also transmitted to Congress Reorganization Plan Number 4 which resulted on October 2 in the consolidation of a number of marine and atmospheric programs in a new National Oceanic and Atmospheric Administration in the Department of Commerce.

In his message on the two reorganization plans, the President said that "only by reorganizing our federal efforts can we . . . effectively ensure the protection, development and enchancement of the total environment."

About EPA's relationship with the CEQ the President said, "The Council focuses on what our

broad policies in the environmental field should be, the EPA would focus on setting and enforcing pollution control standards."

This task was to be accomplished even though the creative activity of 1970 had moved the country ahead of existing legal tools to rectify specific environmental problems. Existing federal and state laws and the capability to enforce them were unwieldly.

Although EPA started with the same difficult legal machinery, its unified, coordinated approach promised more effective enforcement. It also had the benefit of new laws just passed, such as the Clean Air Act Amendments of 1970.

Prior to the establishment of EPA, moreover, federal responsibility for environmental problems was scattered among various departments and agencies, some of whom pursued conflicting goals.

The Atomic Energy Commission, for example, was to protect the environment from radiation hazards while at the same time promoting nuclear power. The Department of Agriculture was to control the use and abuse of agricultural chemicals while simultaneously seeking higher and higher farm yields. Three different departments had roles in the handling and control of pesticides. Such division of responsibility precluded any possibility of a federally integrated, co-ordinated approach to the total environmental pollution problems.

Co-ordinated Program

In the consolidation of programs, state agencies would continue to play a major role with the aid, guidance, and encouragement of EPA. Similarly, federal agencies with expertise in environmental areas would continue their efforts. With an initial staff of 6,673, and a budget of $1,286,351,000. EPA had the basic resources to build an organization equal to the task. However, the existing facilities, programs, and people now under the aegis of EPA were scattered throughout the country and the federal establishment. They, their work and their skills had to be brought together both physically and organizationally.

This organizational effort was complicated because the attack on pollution demanded that vital existing programs continue unimpeded by the realignment. Work also had to be initiated on new programs and initiatives. In the words of the Administrator, "it was like trying to give a man an appendectomy while he was running up stairs."

Furthermore, the credibility of EPA as an action Agency had to be established. There was a real danger that the Agency's pronouncements on standards and pollution abatement procedures might be taken lightly or even ignored. Thus it was critical for EPA to demonstrate that it took its mission seriously. Administrator William D. Ruckelshaus put it this way:

"We are going to insist with all the authority that Congress has provided and with all the powers of persuasion at our command that all existing means for controlling pollution be applied across the board in every city and town and to every industry. We intend to pursue a vigorous enforcement program as the foundation of that effort."

Enforcement

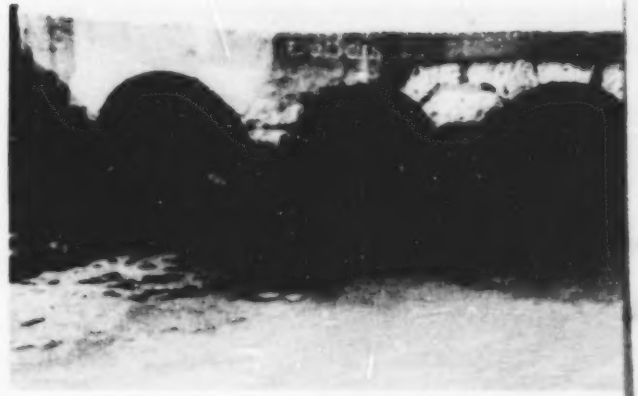
Eight days after EPA's establishment, the Administrator served the cities of Atlanta, Cleveland

and Detroit with violation notices giving them 180 days to take corrective action on severe water pollution problems or risk prosecution. (The three cities did take such action and were granted financial assistance by EPA to help meet agreed-upon schedules for water improvement. By year's end, 60 such 180-day notices were issued to 52 municipalities and eight industries.) Then on January 15, 1971 EPA initiated cancellation proceedings for products and uses of such pesticides as DDT, aldrin, dieldrin and Mirex. EPA vigorously initiated the actions necessary to implement the Clean Air Act Amendments of 1970.

In its first month, EPA took other significant actions. On December 20 it called on the Justice Department to prosecute the U.S. Plywood-Champion Paper Company, Inc. in Hamilton, Ohio for discharging wastes into the Great Miami River. EPA also set up an enforcement conference on the Reserve Mining Company's plan to abate its pollution of Lake Superior. The next day, the agency set up four new programs to train some 2,600 persons for waste treatment jobs. And before the month ended, EPA also suggested proposals on new tax deduction rules for pollution control facilities.

In its first two months the Agency initiated five times as many enforcement actions as all of its predecessor agencies combined in any two month period. These actions underlined the Agency's intent. EPA's presence was felt and taken seriously.

These enforcement actions frequently produced the desired result of obtaining voluntary compliance with federal standards. Last September, for example, sugar-beet refineries in 15 states voluntarily agreed to stop discharging organic wastes



Pollution of waterways by Cleveland, left, Atlanta, lower left, and Detroit, below, was subject of EPA's first enforcement action. The cities were served violation notices giving them 180 days to take corrective action or face court action.

from their plants; this pollution-control program will cost the industry about $13 million.

Organizational Problems

Immediate action was also taken to organize the Agency. By mid-December the Administrator named Acting Commissioners for programs inherited from predecessor agencies—air, water, pesticides, radiation and solid wastes. Five months later, in May, these functions were reorganized under five Assistant Administrators responsible for enforcement; research and monitoring; planning and management; air and water; and the programs concerned with pesticides, solid waste and radiation.

At the outset, the Administrator decided to establish ten regional offices along boundaries already in use by other Federal agencies. He announced that much of the work of the agency would be done through the regional offices; they would be the "cutting edge" of the Agency's effort. Subsequently, the Administrator announced his intention to launch the new regional organization with the designation of Regional Administrators by July 1, 1971. Unfortunately, it was not possible to meet that self-imposed deadline; by September 22, nine Regional Administrators had been appointed.

The difficulties and delays in EPA's organization and reorganization were accompanied by criticism—both from within and without. As EPA's identity emerged, critics argued that it neglected this program or that, that it did not structure itself to pursue its legislative mandates vigorously, and that it did not show perfect wisdom in its selection of key officials.

Air Quality Standards

A major action came in January when EPA, in compliance with the law, proposed National Air Quality Standards specifying the maximum permissible levels of six principal pollutants. Ninety days later, the final standards were promulgated. "These are tough standards," Mr. Ruckelshaus said. "If we have erred at all in setting them, we have erred on the side of public health."

This action started a national program which would have a profound effect on cities. It required the states to develop and submit within nine months detailed implementation plans designed to achieve EPA's primary standards by July 1975, and its secondary standards not long after. Primary standards for the six pollutants—sulfur oxides, particulate matter, carbon monoxide, photochemical oxidants, nitrogen oxides, and hydrocarbons—are to protect the public health. Secondary standards protect against effects on soil, water, vegetation, materials, animals, weather, visibility, and personal comfort and well being.

In emphasizing the difficulties facing city and state planners, and the contribution of the automobile to air pollution, Mr. Ruckelshaus said, "If we are to meet the legal deadline for carbon monoxide, then some cities may have to require drastic changes in their commuting habits."

On January 26, EPA revoked conditional certification of two kinds of Ford truck engines because tests revealed they were over the standard for hydrocarbon emissions. In February, EPA announced the registration of 242 fuel additives to determine which may be harmful to health, or to

vehicle control equipment. Standards for auto emissions of hydrocarbons, which contribute to smog and carbon monoxide, which affect mental performance, also were proposed in February.

In May, a week after he had announced the final national air standards, the Administrator convened a hearing to determine the progress of automobile manufacturers toward an essentially pollution-free car by 1975-6—a deadline set by Congress in the Clear Air Act Amendments of 1970. "Unless we can control the automobile to the levels prescribed by Congress," Mr. Ruckelshaus said, "the automobile is and will remain a major threat to our public health."

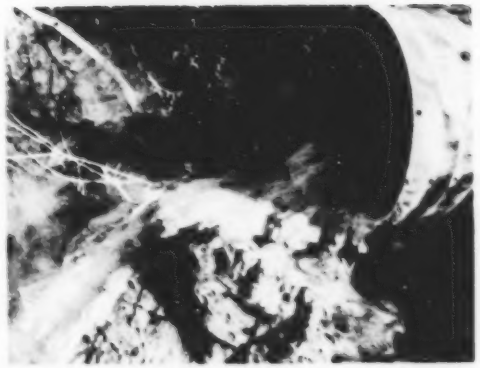
The Administrator told the industrial officials present that the traditional concepts of automobile performance could not interfere with the objective of producing a car "that we can live with as a people." Not to explore the unconventional alternatives is unacceptable, he said.

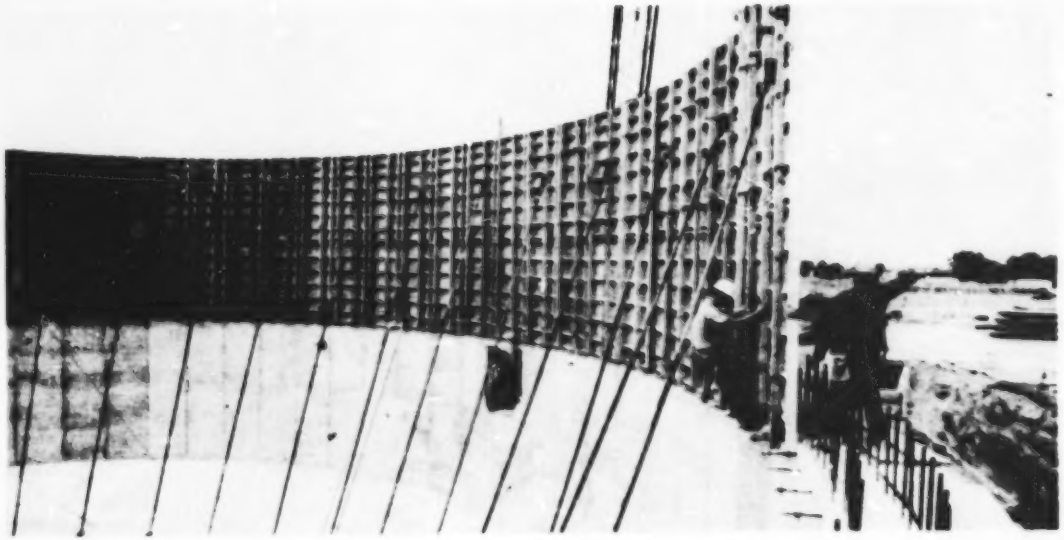
In June, Mr. Ruckelshaus announced an award of the first "clean car" incentive contracts in a program designed to stimulate the private development of unconventional approaches to the initial 1975-1976 auto emission objectives of the Clean Air Act. This program also may provide data to assist EPA in evaluating the auto industry's effort to meet those objectives, and may help determine whether more stringent emission reductions might be possible.

On June 30, EPA announced final regulations for judging compliance of 1975-1976 model cars with requirements for emissions of carbon monoxide, hydrocarbons, and nitrogen oxides.

Control of auto emissions in and around cities is vital to public health. Based on EPA's national air standards, state and city officials must develop plans to control emissions. Such plans may require limited auto traffic in cities. The EPA standards are based on criteria coming from studies such as, below, the effect of carbon monoxide on human performance. Data on actual auto emissions come from tests like those conducted, bottom, at an EPA lab in Ann Arbor, Michigan.

Discharge of untreated sewage, by inadequate plants, right, is the major cause of water pollution in America. Construction of new, modern municipal waste treatment plants, below, is supported by two $billion of EPA's current two and a half $billion budget.





Then, on September 24 EPA announced the development of an experimental motor vehicle engine which appeared to meet the 1976 emission standards. The two-year project was a joint effort of EPA, the Army Automotive Tank Command, and the Ford Motor Company. In announcing successful initial test results of the "stratified charge engine" EPA emphasized that it would not fully meet the emission standard until it had completed a 50,000-mile durability test.

Water Pollution

The Agency moved against water pollution with equal vigor. During its first nine months, EPA took 134 separate actions to curb the discharge of pollutants into lakes, rivers, and streams. It averaged 15 actions a month, almost one every other day.

A key development was the announcement on December 23, 1970, by the President that a water pollution control program would be implemented under the permit authority of the 1899 Refuse Act. The Act held that a permit from the Army Corps of Engineers was mandatory for any discharge of industrial waste into navigable rivers. Thus a law that originally was concerned with the navigability of our rivers became a prime instrument in the fight against pollution.

All industrial dischargers were ordered to file applications with the Corps by July 1, 1971. If, in the opinion of EPA in consultation with state water authorities, a proposed discharge schedule would violate water quality standards, the Corps of Engineers would be advised to deny the permit.

By September 17, 1971 the Corps had received

17,933 applications for permits, included were ten percent of the industrial dischargers who cause 90 percent of the problem. However, EPA and the Army Corps of Engineers identified some 28 companies which had not filed, and the Agency asked the Justice Department to take legal action against these firms.

Also under the Refuse Act, EPA carried forward proceedings against 10 of the 50 industrial plants identified in 1970 as dischargers of mercury. These civil actions prompted a reduction in total discharges from 139 pounds to two pounds daily. Most violators were convicted and assessed penalties, in one case, in excess of $100,000.

Enforcement Conferences

Another tool used to advantage against water pollution was the regional enforcement conference. In the course of the year, EPA held conferences on water pollution problems of Lake Superior, Lake Michigan, Long Island Sound, Galveston Bay, Lake Erie, the Monongahela River, Pearl Harbor, the Ohio River, Boston Harbor, the Gulf Coast estuaries of Perdido Bay and Escombia Bay, and the waterways of Dade County, Florida, and South Dakota. Most of these conferences yielded positive results in the form of reduced pollution, establishment of pollution abatement plans, and implementation of plans.

New legislation also had helped. The Water Quality Improvement Act of 1970, for example, prohibited the discharge of oil into navigable waters. It affected onshore facilities and stipulated that in case of a spill the owner was liable for cleanup costs and penalties. In the enforcement of this Act, EPA cooperates with the U. S. Coast Guard.

Money For Treatment

Enforcement alone, of course, cannot solve the problem of water pollution. The major part of the problem is that most municipal sewage treatment plants are woefully out-of-date. For this reason a major portion of EPA's budget—about 2 billion of 2.5 billion dollars—provides localities funds for the construction of modern treatment plants, including experimental pilot plants that might well demonstrate a better, more efficient way of disposing of municipal sewage. In the past year, a number of these projects show promise. Among them:

- A full scale demonstration of the removal of phosphates from water by the addition of minerals with minimum modification of the installation in Richardson, Texas.
- The technical and economic practicability of utilizing waste "pickle liquor" (ferrous chloride) to remove phosphorus from raw sewage has been developed in some six different projects.
- A small scale plant study at Batavia, New York, has demonstrated that the use of pure oxygen instead of ordinary air in secondary treatment can increase the capacity of the sewage treatment plant significantly.
- Another plant study in St. Michaels, Md. has demonstrated how secondary treatment effluent can be disinfected with ultra-violet light.
- A method of regenerating powdered carbon for sewage treatment has been developed on a small pilot plant scale at Lebanon, Ohio.

Control of application is a key to minimizing commercial misuse of pesticides. While seeking such authority, EPA has initiated cancellation proceedings against many DDT, aldrin/dieldrin, and 2,4,5-T products.

- On Pikes Peak a wastewater renovation and reuse system uses an activated sludge-ultrafiltration package plant. This small plant may have wide application in many remote tourist areas.
- A mathematical network model was developed to find the most economic solution to problems of water supply, wastewater treatment and water reuse in well defined areas.

Industrial Waste

Since a significant part of the municipal sewage problem is the industrial contribution of waste chemicals, EPA is encouraging the modification of industrial processes to reduce or eliminate noxious waste by-products.

While it is impossible for a single agency to redesign every industrial process which contributes to water pollution, it can encourage individual industries to do so themselves. Also EPA can provide direct research aid to major industries to correct widespread industrial processes.

Pesticides

Pesticides are another cause of water pollution. In 1971 some 34,500 registered products were manufactured from one or more of 900 chemical compounds. In 1970, U. S. production of these products amounted to 1,034 million pounds, including 59 million pounds of DDT products (the lowest since 1949), 105 million pounds of mercury fungicides, 89 million pounds of the aldrin toxaphene group, 15 million pounds of parathion, and 12 million pounds of 2,4,5-T.

Although farmers are the largest users of pesticides, about half of the registered products are sold for use in and around homes and industrial plants. It is estimated that the number of accidents with pesticides ranges over 50,000 a year—involving humans, livestock or wildlife.

As in the other programs, EPA's attack on the problem has been multi-pronged. One approach has been to initiate hearings on possible cancellation of the registration of certain products. In the past year, cancellation proceedings involved some 1,800 to 2,000 DDT products of about 250 companies, 1,300 aldrin/dieldrin products of 377 companies, and 307 2,4,5-T products of 107 companies.

Another weapon in EPA's pesticide control arsenal is the statutory authority to establish safe limits on pesticide residues in food. EPA works in cooperation with the Food and Drug Administration, in monitoring compliance with these limits—a program which inhibits promiscuous use of these chemicals.

Much of the pesticide problem is directly related to misuse. The bulk of these chemicals is applied, not by the farmers, but by commercial applicators. They are paid by farmers on the basis of how effective the chemical is and not on the basis of the amount applied. This encourages gross over-application to the detriment of the environment.

To combat this situation, the Administration has proposed legislation calling for the licensing of commercial pesticide applicators so that their operations can be more closely regulated.

EPA has formed a special scientific review group to study pesticide products containing lead, arsenic mercury, heptachlor, chlordane, endrin, benzene hexachloride, lindane and toxaphene. New research on the effects of these products is under way and

will provide a basis for registering or cancelling registration of these products. The long-term objective is to place safe control over manufacture and use of these economic poisons.

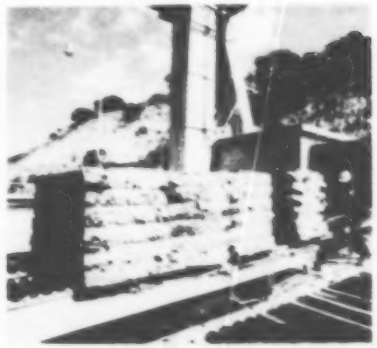
Research for regulation represents only part of the total effort. Simultaneously, research is being conducted to develop alternatives to pesticides, such as biological controls which do not pollute the land and water, or new pesticides which quickly break down into harmless substances after performing their function. This effort involves EPA, other federal agencies, and much of the pesticide industry.

Solid Waste Programs

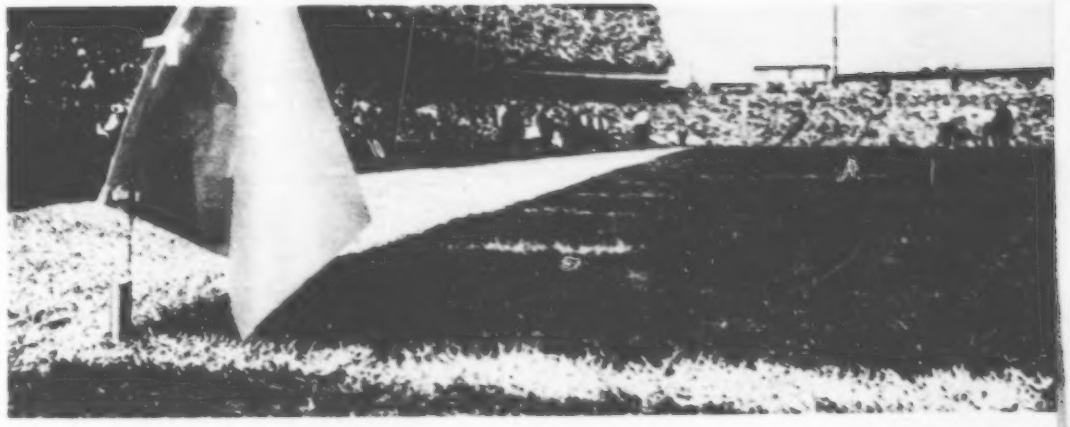
The Resource Recovery Act of 1970 requires EPA to publish guidelines for the construction and operation of solid waste disposal systems, and directs the Agency to submit to Congress a comprehensive plan for a network of hazardous waste disposal sites.

In July 1970, a program called Mission 5000, was launched. The objective is to close 5000 of the 15,000 open dumps across the nation in two years through local action. In 14 months, the program succeeded in closing or converting to sanitary landfill 800 of these sites.

Simultaneously, EPA has been attacking the persistent problem of disposing of some 360 million tons of urban waste annually by upgrading local waste management systems. The objective is to develop efficient, environmentally sound systems and to establish the proper framework for large-scale recycling in the future. To accomplish this, EPA now has solid waste planning grants with 46 states, five interstate agencies, and eight regional agencies. To date, the number of state solid waste programs has climbed from five to 48 and the number of full-time state solid waste personnel has increased from 13 to over 200. In addition to the planning grants, EPA also has awarded some 60



Sanitary landfills offer communities the best currently practical method of solid waste disposal. New methods for compacting and bailing, left, make landfill disposal more efficient. Properly managed landfill sites can be converted, when filled, to parks or recreational areas such as the football field and stadium, below, near Salisbury, Maryland.



grants to municipalities to demonstrate existing or advanced technology in waste disposal.

EPA's longer-term objective, however, is increased resource conservation. This is broadly defined to include all substances, energies, manpower, and conditions we value. Maximum resource conservation may be accomplished for different locales by disposing of wastes in a sanitary landfill, with a park or a golf course as the eventual end use, or by separating waste materials into commodities for recycling, or converting them to other uses such as energy production.

Recycling Questions

An essential question for which there must be a positive answer in resource conservation is: are there markets for recycled material? Although some 25 percent by weight of our national production is recycled, very little of that is residential refuse. The key factor here is demand. If the demand for recycled materials does not increase, recycling will not increase.

EPA is conducting a major study of this problem with particular emphasis on examining how Federal purchasing power might best be utilized to increase the demand for secondary materials.

Radiation

In his Clean Energy Message to Congress on June 4, 1971, President Nixon pointed out that the nation's demand for electricity is fast outstripping its generating capacity, and "a sufficient supply of clean energy is essential if we are to sustain healthy economic growth and improve the quality of our national life."

Control of heat waste discharges to prevent thermal pollution is possible through use of cooling towers such as those, right, under construction near Harrisburg, Pa. Through its water pollution control functions, and by commenting on impact statements EPA influences the siting and operation of nuclear power stations to minimize discharge of waste heat into waterways.

To meet this growing demand, electric utilities are turning to nuclear power stations. There are 23 in operation now; 125 are expected by 1975; and as many as 950 may be in operation by 1990. By establishing maximum safe radiation exposure standards, EPA is responsible for protecting the health of people living near nuclear plants. EPA must also protect against other adverse effects, such as discharge of waste heat into waterways.

While the Atomic Energy Commission has licensing power, EPA can influence safe siting and operation of reactors through the Agency's water pollution control functions, and by commenting on environmental impact statements for proposed nuclear facilities. EPA has reviewed more than 50 such statements prepared by the AEC, and in many cases was able to affect changes.

Noise Abatement

Reflecting a new area of the public's concern for environmental improvement, EPA established an Office of Noise Abatement and Control on April 29, 1970. In passing the Noise Pollution and Abatement Act of 1970, Congress directed the Administrator to set up such an office to study environmental problems relating to noise and its control.

Beginning in July the office conducted a series of regional public hearings in Atlanta, Georgia; Detroit, Michigan; Chicago, Illinois; Dallas, Texas; Los Angeles, Palmdale, San Francisco, California; New York City; Boston, Massachusetts; and Washington, D. C.

Testimony was heard from experts and the general public on the psychological and health hazards of noise. Evidence was also taken on the promising advances in noise suppression technology. This information is being consolidated in a report which EPA will send to Congress along with recommendations for programs to combat noise pollution.

An Intergrated Approach

As EPA works in all of these problem areas—noise, air, water, radiation, pesticides, solid wastes—it brings to the task something that has not existed before: an integrated national approach. In reviewing an impact statement, for example, EPA takes an environmental overview, crossing interdisciplinary, political, and geographic borders.

In the past 12 months, EPA reviewed more than 1,000 environmental impact statements. In addition to specific recommendations EPA has given the statements hard scrutiny based exclusively on its environmental advocacy role.

A prime example of this role was the Administrator's letter to Interior Secretary Rogers C. B. Morton transmitting EPA's comment on the impact statement for the Trans-Alaska pipeline. EPA recommended consideration of what might happen to the oil coming out of the pipe at Valdez, on shore or on sea; it asked for further exploration of alternative pipeline routes, particularly through Canada's Mackenzie Valley; and the Agency requested participation in decisions on technical aspects to protect the environment should the pipeline be built.

Environmental considerations, therefore, have become a major aspect in design and planning of every new federal action.

Noise abatement studies are being completed by EPA at the end of its first year. A report on the health and mental effects of noise pollution will be sent to Congress, along with EPA's recommendations for control programs.

What causes whole lakes to "die" from eutrophication? This and many other serious environmental questions are challenging EPA's researchers working in three National Environmental Research Centers, and a Western Environmental Research laboratory where the focus is on effects of radiation.

Monitoring Role

All such EPA evaluations require facts to work with, facts that were not available in sufficient detail in the past. The Agency needs "effects facts" to identify various substances in the environment, what they may do, how they affect us, and the environment in general. EPA needs to know how they move through the environment, and where they finally end up.

To develop these facts, EPA makes research grants to other government agencies and to the private sector. It carefully reviews research performed by organizations throughout the world, and it operates its own network of 26 laboratories in 18 states. Adding watercraft, instrumented aircraft, field stations and monitoring sites, the network contains more than 130 facilities.

Standard-Setting and Research

EPA employs 1,700 scientists, technicians and support workers to conduct research—the full-time occupation of one of every four persons on the agency's current payroll, and the part-time occupation of hundreds more.

The laboratories are valued conservatively at $55 million. With the President's reorganization plan, EPA acquired this research capability from other federal agencies, and much of the first year was spent binding it together.

At the core of EPA's research effort are the three National Environmental Research Centers (NERC's), each a complex of laboratories and associated facilities, each with a continuing research theme. Additionally there is the Western Environmental Research Laboratory, which concentrates on the study of radiation effects.

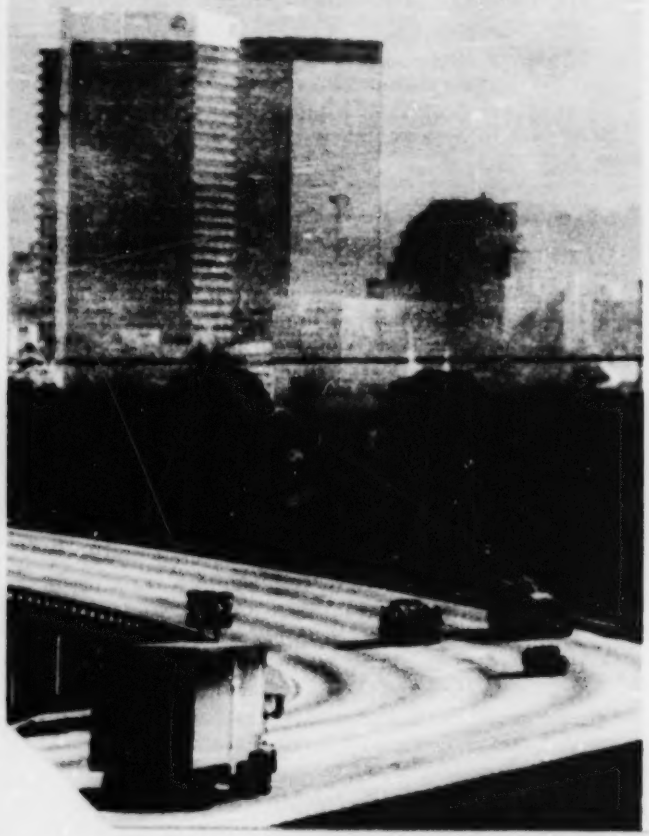
At the Cincinnati Center, the main interest is technological control of pollution. How might value be found in garbage? Can sludge help fertilize a corn field? Can phosphates be extracted from waste water and sold at a profit?

EPA's second Center is a complex of laboratories with headquarters at Research Triangle Park, between Raleigh and Durham, N. C. The principal concern at this Center is health effects research, and epidemiology. How, for example, are various forms of air pollution distributed and cause or aggravate disease, or otherwise affect delicate body systems? Will standards promulgated by EPA improve public health? Can the improvement be shown statistically? To find answers nearly 200,000 people will furnish medical data to the Center's pioneering Community Health Environmental Survey Studies.

The third EPA Center, at Corvallis, Oregon, with seven associated laboratories is investigating and analyzing various aspects of ecology and environmental control. What causes eutrophication, the immensely complicated process that causes whole lakes to "die?" Can salmon be induced to spawn in cleaner, healthier rivers where dams don't barricade their upstream progress?

Air Pollution Research

The Environmental Protection Agency shares the opinion of the President's Council on Environmental Quality that the 200 million tons of man-made waste dumped into the air annually constitutes the greatest single environmental threat to



High levels of air pollution, such as occurred over Birmingham, Alabama November, 1971 pose the greatest single environmental threat to the nation's health. Under emergency powers of the Clean Air Act of 1970 EPA in cooperation with state and local authorities, acted to curb emissions of Birmingham's largest industries. A restraining order was issued on November 18 against 23 firms which shut down operations the same day. This was the first such action by EPA under the 1970 law. It was taken because of the danger to public health in Birmingham. While carrying forward its standards-setting and enforcement responsibilities under the 1970 Act, the Agency continues research on health effects through the Community Health and Environmental Surveillance Studies—CHESS.

the Nation's health. That opinion is being confirmed through the Community Health and Environmental Surveillance Studies (CHESS), which seek to compare the health of those who breathe polluted air with those fortunate enough to live in less polluted environs.

Working in 30 different communities across the Nation, EPA scientists and technicians have enlisted over 38,000 volunteers willing to let government monitor their health. The volunteers have been formed into sets and subsets depending on the quality and quantity of air pollution above their particular communities.

Many fundamental questions have been posed by Project CHESS. What effect does long exposure to polluted air have on school absenteeism? Is there an increased frequency of acute and chronic respiratory disease in highly polluted environments? Does the frequency of asthma episodes increase? Do pollutants concentrate in specific organs and cause their malfunction? Does the death rate rise and fall in rhythm to that day's pollution? Is there a correlation between heart attacks and high pollution?

It is presumed, of course, that state implementation plans based on standards promulgated by EPA will lower the levels of air pollution in CHESS communities. The health of residents should improve accordingly. CHESS should provide a means of measuring the degree of that improvement.

Another major research effort is authorized under the Solid Waste Disposal Act of 1965 and the Resource Recovery Act of 1970. These laws allow EPA not only to perform its own research, but also to seed the university and industrial communities

Engineers complete work on a combustion power unit to demonstrate the feasibility of generating electricity while burning solid wastes. An EPA funded project, the demonstration is one of many which may provide better solutions to environmental problems in the future.

with grants to stimulate new approaches and developments. And what are some of the results?

Cellulose fiber extracted from municipal garbage has been converted—experimentally—into simple proteins. The chemical removal of phosphorus from industrial wastes is becoming a standard practice. The ashes and junk from a burned city dump have been used along with sludge to nourish and irrigate experimental corn crops. New methods to detect and measure chlorinated hydrocarbons, carbamate pesticides, paper mill wastes, oil, mercury and other water contaminants are being perfected.

The city of Franklin, Ohio, is currently demonstrating a promising and advanced system for recycling municipal waste, and an EPA grant helped make the demonstration possible. In the Franklin system, trash from the town dump is run through a hydropulper and reduced to slurry. Magnets help remove the iron; paper fiber is recovered for reuse; and glass removal is considered feasible. As a final benefit, the residue contains a relatively high percentage of aluminum and that, too, may later be mined out.

Water Pollution Research

Rather than undertake costly studies of all threatened bodies of water, EPA is working on a "water model" that promises general applications. The research is supervised at the Corvallis Center.

Until recently, water pollution was considered a relatively simple biochemical process, but investigations show it to be extraordinarily complex. It was found, for example, that every body of water tolerated pollution differently, depending on its physical characteristics.

Recent research indicates that the onset of eutrophication depends on the water's temperature, mineral content, natural aeration, chemical input, flora and fauna. In some lakes, the addition of relatively small quantities of phosphates can tip the balance and bring on eutrophication. In other lakes, for different reasons, nitrogen might be the limiting variable.

Armed with the predictive ability of a mathematical model, planners may be able to place treatment plants strategically and design the best kinds of plants to remove the most offending chemical.

Data Published

To be effective, research information must be made available to all. In co-operation with industry, EPA conducts a "technology transfer program," which transfers data coming from research and demonstration projects to those who can use it.

The results of EPA research are now being incorporated into manuals for environmental decision-makers and design engineers who can incorporate it into their own work. These EPA volumes, freely offered, represent the most complete and up-to-date information available on pollution control techniques. It is important to deliver knowledge to potential users so that it can be put into use.

This is accomplished not only through the technology transfer program, but also by training in pollution control techniques. EPA sponsors a variety of educational and training programs for pollution control workers. Sacramento State College, working under an EPA grant, has developed a field study correspondence course intended for more than 2,000 water pollution control operators.

Direct training programs—some 60 courses in all—are offered at Cincinnati, Ohio; Ada, Oklahoma; Athens, Georgia; Corvallis, Oregon, and Edison, New Jersey.

In addition, EPA's Institute for Air Pollution Training at Research Triangle Park, North Carolina, conducts courses, seminars and workshops on air pollution control technology that are now offered in Austin, Texas; Boston, Massachusetts; Chicago, Illinois; Cincinnati, Ohio; Denver, Colorado; Kansas City, Missouri; New York, New York; San Francisco, California; and Seattle, Washington. This institute alone accounted for 4,000 trainees who successfully completed its course in 1970 and 1971.

Additionally, EPA sponsors fellowships and makes grants to universities for the training of future experts in environmental management.

What remains to be learned is immense. Through its scientific activities the Agency must define the full extent of pollution, how it comes about, how it spreads, what it does, and how man can control it.

Lowest Part of the Curve

This year has been characterized by purposeful activity and some significant achievement on all fronts—organization, research, monitoring, standard-setting, and specific pollution abatement actions. Yet, much remains to be accomplished. So little has been done in the past and so much has to be done that we are only on the very lowest part of the curve. This attitude pervades the Agency and causes frustrations when issues arise which defy the simplistic solutions often offered by the public or others who do not bear EPA's responsibilities.

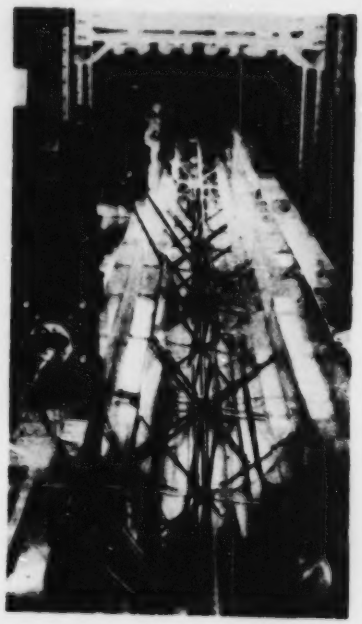
Three such issues which illustrate the complexity of decision-making arose in EPA's first year. In each, there was no clear-cut scientific evidence of public health hazard, there were unanswered questions about total environmental effects, and there were serious economic implications.

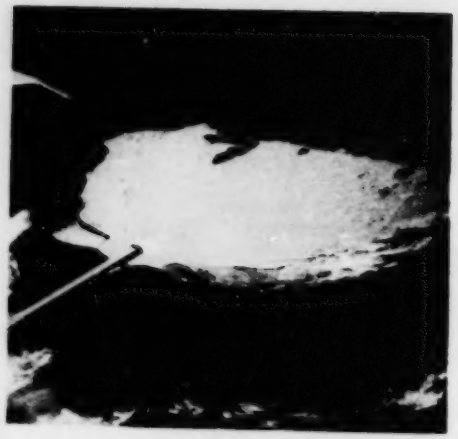
The most recent of the three occurred in October; the issue was federal policy regarding detergents as they affect public health and the environment. The Administrator participated with the Surgeon General of the Public Health Service in a press conference to relate concern about the health hazards of non-phosphate detergents. Some of these caustic containing products had been the cause of accidental poisoning of small children. The products had come on the market because of public awareness of the eutrophication problem caused by phosphate containing products. In a government-industry effort to solve an environmental problem, a public health problem arose.

In the face of public criticism that EPA had retreated from a strong position against phosphate detergents, the Administrator sought to establish EPA's policy on the basis of the public's right to choose detergents according to what is important to each family, taking into consideration the local eutrophication problem, if any. Where there is no such problem—and that must be established by EPA—a housewife can choose phosphate detergents and not worry about accidental poisoning of her small children.

Where there is a local eutrophication problem, and if it is an adult household, the housewife could use the non-phosphate, caustic detergent. If she does have small children, obviously her choice

A device that simulates any or all conditions of fresh water streams is used in EPA studies to control water pollution.





Lake Superior, deepest and cleanest of the Great Lakes, is the subject of public concern about daily discharges of 66,000 tons of taconite tailings by the Reserve Mining Company.

is either to keep the non-phosphate, caustic detergent out of reach, or to use the phosphate detergent.

The Administrator also explained an alternative method for preventing eutrophication—an alternative which could prevent all phosphorus waste, not just from detergents, from reaching bodies of water. This is a recent technological development for modification of waste water treatment plants.

The other two issues, the Reserve Mining case and concellation of DDT type pesticides, go back to the early days of EPA's formation, and beyond.

The Reserve Mining case has aroused intense interest and concern, not only in the Lake Superior region but throughout the country. The issue contains some of the classic elements of an environmental problem: jeopardy of jobs, degradation of the largest, deepest and cleanest of the Great Lakes and the familiar clash of economic factors vs. environmental improvement.

The mining company discharges approximately 66,000 tons of taconite tailings into Lake Superior every day. An August 1970 session of the Federal-State Lake Superior Enforcement Conference concluded that the tailings have a harmful effect on the ecology of the lake by reducing organisms necessary to support fish life. The firm was directed to submit preliminary abatement plans by December 1970 and did so in January 1971 when another session of the Conference was held. A technical committee named by the conferees found the plan "unacceptable".

The Conference was reconvened April 22-23, 1971 in Duluth, and on April 28 Mr. Ruckelshaus served a 180-day notice on Reserve Mining. At the same time, EPA hired an engineering firm, to make a study on the engineering and economic feasibility of on-land and in-lake disposal alternatives. The on-land disposal could cause a solid waste problem, while it is known that present in-lake disposal affects fish life. The plan was delivered October 28, distributed to interested parties, and made available to the public. EPA asked for comments within 30 days. At the writing of this report, no comments had been received. EPA expects a resolution of the issue early in 1972.

The pesticide controversy goes back to the early 1960's when the public became aware of the effects of DDT on the environment, particularly wildlife. At the time of EPA's formation, the Federal Government was following a policy of discontinuing uses of DDT type pesticides except for those essential to protect public health.

Despite evidence that any harm had come to humans from direct exposure to these pesticides, the national policy to phase out their use was responsive to public demand. The problem came out of the statutory requirements establishing how this should be done. EPA began a prolonged hearing process to assess the dangers and effects of pesticides on humans, and, as the law requires, to determine on basis of the evidence whether they should be banned. Many critics, not understanding the hearing requirements of the law, said these pesticides, particularly DDT, should be banned immediately.

There are other examples of issues which cannot be reduced to simplistics, but at year's end EPA is more inclined to look ahead with a determination to solve our environmental problems, no matter how complex.

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The End of the Beginning

Although much has happened in the past 12 months, EPA is not content with the record. Much more must be accomplished next year, and in succeeding years if EPA's objectives are to be achieved.

"The 1970's," President Nixon has said, "must be the years when America pays its debts to the past by reclaiming the purity of its air, its waters and our living environment. It is literally now or never."

As the year drew to a close, Deputy Administrator, Robert W. Fri was asked where he thought the Agency was in terms of complying with the Presidential admonition. "We are at the end of the beginning," he said.

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